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| 10/563,233 | 06/09/2006 | Thomas McQuiggin Lowes | 1717198 | 8664 |

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| EXAMINER |
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WILSON, GREGORY A

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| ART UNIT | PAPER NUMBER |
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3749

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07/29/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/563,233 | Applicant(s) LOWES, THOMAS MCQUIGGIN | |
| | Examiner Gregory A. Wilson | Art Unit 3749 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 and 47-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 and 47-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments, filed 6/22/09, with respect to JP (05 223228A) have been fully considered and are persuasive. The rejections of claims 1, 2, 10-14, 21, 22, 27, 29-37, 44, 45, 57-61 by JP (05 223228A) have been withdrawn.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the flare diffuser and bluff body must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

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application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-43 and 57-61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "sufficiently high momentum" in claims 1, 23 and 37 is a relative term which renders the claim indefinite. The term "sufficiently" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The specification does not provide a value or range such that a person having ordinary skill in the art could reference to determine what would be suitable considerations for "a sufficiently high momentum" to produce the desired jet.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-4, 9-16, 18, 21, 22, 27-39, 42-45, 47, 48, and 51-61 are rejected under 35 U.S.C. 102(e) as being anticipated by **Hansen et al (6,672,865)**. **Hansen et al** a kiln system (10) for mixing process gas flow that flows through housing (12) of an exhaust gas bypass system (SEE Figures 1-4) including a precalciner and riser duct, wherein the kiln system is for preparing cement clinker (SEE Summary of Invention) and has a gas temperature between 850-1400 degrees Celsius (SEE column 13, lines 27-38) and

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includes a plurality of injectors (32) arranged at angles of between 0 to 60 degrees at predetermined intervals around the cross section of the interior of the housing (SEE Figure 6) and are connected to a gas supply system (34) which includes a fan, blower or compressor which is operable to feed pressurized air (or preheated) of high energy/velocity (a jet), to the injectors to produce rotational momentum in the kiln gas stream to dissipate stratification (column 9, lines 23-35) such that kiln gas is entrained in the injected gas along the axis of the housing, a combination of the position of the injectors within the kiln system and the nozzles (36) (SEE Figures 8a & 8b shows end portions with slots functioning as vanes (ie swirling means) or bluff bodies since they consist of a flattened front) aid in imparting the rotational momentum (swirling) (Figure 7 illustrates the inherent gas flow out of the nozzles as affected by the flattened fronts shown in Figures 8a & 8b **as it enters the housing of the kiln system**) and as can be seen in the Figures 8a & 8b have angles which anticipate the applicants claim 4 and the injectors are capable of impinging tangentially on an imaginary circle which forms towards the center of the housing as suggested by the flow shown in Figure 6 of high pressure air exiting the nozzles (36). Based off the illustration of Figure 6, a person having ordinary skill in the art would recognize and conclude that at least 10 percent of the cross sectional area of the housing is covered by the circle of air flow, additionally the claims directed to the velocity of the injection gas as measured in Reynolds Number or the frequency of turbulence or the calculation in which these values are determined are not novel limitations which cannot be performed by the structure of Hansen et al.

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Claims 1-9, 27-30, 33-35, 37-41, 44, 45, 47-50, 57, 58, 60 and 61 rejected under 35 U.S.C. 102(b) as being anticipated by **Quittkat (4,248,639)**. **Quittkat** discloses a system for mixing a process gas flow (unnumbered, "hot gas") which flows through the housing (27) of a kiln system (SEE Figure 1) and includes at least one injector (18) (SEE Figure 2) provided to the housing which injects preheated air, a gas supply system (18, 21) connected to the injector for supplying injection gas to the injector at a pressure (inherent), the injector injects gas into the housing at such a momentum to produce a jet having turbulent flow characteristics such that process gas flow ("hot gas") is entrained by the injected gas (as illustrated in Figure 2), the injector is accompanied by swirling means (32, 33) which provide an axial swirl which affect the injected gas as it enters the housing of the kiln system (SEE Figure 2); in re claim 2 the injector is arranged such that "hot gas" is flowing through a housing along an axis of the housing (Figure 2), in re claim 3, the swirl means are swirl vanes which meet the applicants limitation of having an angle of approximately 10-35 degrees (ie: claim 4), in re claim 9, Figure 2 shows hot gas which is caused to swirl by vanes (32, 33) and entrained with fuel (34) before the injected gas flow impinges upon an interior of the housing which is a precalciner or gas riser duct (in re claims 33 and 34).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5, 7, 8, 17, 19, 20, 40, 41, 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hansen et al (6,672,865)**. **Hansen et al** discloses the applicants primary inventive concept as stated above including a system for mixing a process gas flow that is flowing through the housing of a kiln system including injectors (32) for supplying pressurized gas into the interior of the housing. As previously stated, the injectors have a portions with slots wherein a flattened front (Figures 8a & 8b) serve as vanes or bluff bodies and work in combination to the angle in which the injectors are set to create a rotational momentum. Hansen et al does not teach flare diffusers provided in the injector, however, it would have been obvious to design the injectors to use flare diffusers instead of a bluff body or vane or in addition to these elements since when it comes to diverting a flow of gas to a swirling motion, vanes, bluff bodies and flare diffusers are regarded as art recognized equivalents and a person having ordinary skill in the art would have found it an obvious modification to exchange any of these elements for the other.

Response to Arguments

With regards to applicants argument that the nozzles as shown in Hansen et al (6,672,865) in particular Figures 8a & 8b are not able to impart rotational momentum (swirling) to the jets of injected air, the examiner respectfully disagrees and directs the

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applicants attention to Figure 7 which shows arrows indicating a swirling flow of injected jet out of the slots of the nozzles; in view of the applicants lack of disclosure of how much flow is needed to impart a rotational momentum, the examiner takes the position that as the flow exits the nozzle slots of the injector, a rotational momentum is created which will impact the air flowing therethrough such that a swirling will occur as evidenced by Figure 7.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory A. Wilson whose telephone number is (571)272-4882. The examiner can normally be reached on 7 am - 4:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve McAllister can be reached on (571) 272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregory A. Wilson/
Primary Examiner, Art Unit 3749
July 27, 2009